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THE RELATIONSHIP OF PERSONALITY RIGIDITY TO THE SCHOLASTIC ACHIEVEMENT OF MATRICULATED STUDENTS

by

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The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled, "The Relationship of Personality Rigidity to the Scholastic Achievement of Matriculated Students," submitted by Harold J. Hoare in partial fulfillment of the requirements for the degree of Master of Education.

ABSTRACT

This investigation was concerned with deriving a better understanding of the relationship of rigid personality characteristics to academic achievement. Groups of students possessing high and low degrees of rigid personality characteristics were identified and then compared for achievement on grade XII averages controlled for academic ability. The design allowed examination of the groups of male and female students separately as well as together. Each of the five measures used to examine rigid personality characteristics was dealt with separately.

The problem of the study was: When academic ability is held constant, do students with a high level of rigid personality characteristics attain higher grade XII averages than do students with a low level of rigid personality characteristics? The population sampled was composed of students who had graduated from grade XII and had just been accepted for admission to the University of Alberta in Edmonton.

Two thousand two hundred and ninety-three University of Alberta freshmen were tested at the time of registration in September 1966. Freshmen are asked to take the Cooperative Academic Ability Test as part of the registration process and in this instance they were asked to also take the other tests necessary for the conduct of the study. From this population of students, samples were drawn consisting of extreme groups on each measure of rigid personality characteristics.

Results of the investigation indicate that rigidity as defined by two of the five instruments used is positively related to academic achievement. On the other hand, the hypothesis was not supported when rigidity was defined by the other three instruments used.

It was concluded, therefore, that there is some evidence that rigid personality characteristics have a positive relationship to academic achievement in the form of higher grade XII averages. Rigid social characteristics among female students seem related positively to academic achievement, while rigid self-governing manner and approach to work among male students seems related positively to academic achievement.

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CHAPTER I

BACKGROUND OF THE STUDY

The current study stems from the writer's consideration some years ago of how people adjust to routine and regimentation. The degree of a person's rigidity of personality appeared to play an important part in his process of adjustment.

Rigidity is not a simple concept and has never been satisfactorily explained.

Rigidity becomes an area of utmost interest and concern in this fast changing age of technology. The individual's chance of meeting the ensuing demand for change and frequent readjustment depends upon his facility to more rigidly acquire new information and learning rather than succumbing to the enticement of personal pleasure and diversion. Perhaps Fromm (1941) expresses the existence of some inherent regulatory force such as rigidity when he states that:

> Though there is no fixed human nature, we cannot regard human nature as being infinitely malleable and able to adapt itself to any kinds of conditions without developing a psychological dynamism of its own. (p. 14, 15)

He explains that certain sectors in man's nature are more flexible and adaptable than others; that human nature has certain inherent mechanisms and laws for psychology to determine.

The new demands on the individual have been recognized for some time; for instance, a study on manpower and education reported by the National Education Association (1956), indicates that in the future,

individuals must have an expectation of change, a flexibility of skills, a general upgrading in ability, and an adaptability to changing circumstances. From the future demands on individuals for increasing change, upgrading and adaptability, the study of rigidity becomes of utmost importance.

According to Eysenck (1961), flexibility has been considered the obverse of rigidity. In such a comparison, rigidity seems to have been looked upon as a less desirable trait than flexibility. Thus, in everyday conversation, a statement that people will have to shed their rigid behavior to adjust to these times of change, would be readily accepted. However the question should be asked as to whether this is per se an expression of rigid attitude or belief? It would be preferable indeed to maintain an open mind; perhaps in some instances rigidity might facilitate change and flexibility retard it.

Taking academic studies as an example, it is quite conceivable that the flexible person may be at a distinct disadvantage. He may tend to be more informal, adventurous and highly concerned with personal pleasure and diversion. On the other hand, the more rigid person may tend to be deliberate, industrious and to place a higher value on work. In such an instance, if academic achievement were considered a desirable end, then flexibility may no longer be the virtue whereas rigidity might.

As Miller and Good (1960) so aptly describe, a human's individuality, born out of the genes of his great family, cannot help

but create problems for human societies. For unlike the bees and the ants that have complex societies and inborn, fixed reflexes to go with their fixed social patterns, the human being is required to adjust his individuality to a structured society. The cortical cells of the brain are not committed at birth to rigid patterns, yet our society is structured, and therefore may demand a certain rigidity on the part of the individual to adjust to it. If so, we would be obliged to consider that he develops rather than inherits this form of rigidity.

The literature on rigidity does not provide clear subdivisions and to achieve order, the study necessarily focuses on one area of concern. The selection of that area followed from the earlier consideration of adjustment to routine and regimentation mentioned above. Thus, the contention that a positive relationship exists between personality rigidity and academic achievement is considered. In accord with this contention, the purpose of this study is to investigate whether, after controlling for academic ability, students who have a high degree of rigid personality characteristics achieve better on grade XII departmental examinations than those students who have a low degree of rigid personality characteristics. It is hoped that the results of this investigation will provide a better understanding of the implications of rigidity of personality in academic achievement and be of service to counsellors and educators in aiding those students who fail to achieve to the level of their potential.

CHAPTER II

REVIEW OF RELATED LITERATURE

This study is based on interest in how people who are seemingly born with non-rigid tendencies, adjust to the routine and regulation of a rigidly structured society. In this context, the study proceeds to consider the degree to which rigidity affects performance rather than the desirability of what is achieved. The question that follows, then, is whether people need to develop rigid traits in order to get along in society as it is today. Throughout the study, however, the aspect of desirability is kept in mind. In this regard, it is recalled that the Protestant ethic of productivity, having derived its greatest emphasis during the Puritan regime in England and enhanced by the industrial revolution, led to the opinion that productivity by itself was a desirable goal (Weber, 1930). However Borrow (1964) has since suggested that the common positive approval of labor, whether for mastery over matter or an ultimate value in itself, does not reflect a Protestant ethic but a doctrine of work tied to various ideologies and traditions. Regardless of these two views the fact remains that less emphasis is placed on the question of the value of productivity in respect of particular aspects of behavior than on productivity *per se*. Hence school achievement has been seen as a desirable goal by teachers who overlook the question of what is being achieved. This has been frequently referred to as part of the middle class value system of most

teachers. In this regard, Havighurst and Neugarten (1962) point out that:

> The school, as a social institution, teaches the child a middle-class set of goals and behaviors. (p. 117)

Blocher (1966) further indicates that middle-class children have higher need for achievement than lower-class children. Having learned to place less value on the desirability of doing the work than on achieving the end product, appears to have a close relationship to the development of logical positivism, whereby only that which is verifiable, is meaningful. It seems that existential philosophy may have gained resurgence as a reaction to this logical positivism, for it argues that certain aspects of human behavior are not quantifiable and that therefore science alone cannot produce an adequate description of human behavior. Titchener (1909-1910) spoke of his psychology as "existential," for besides considering what the elements are and how they are combined, there is a need to explain the why, that is, to explain and fit conscious experiences into the organism and the world at large. May (1965) points out that existentialists such as Kierkegaard and Nietzsche had revolted strenuously in Europe against the essentialist nature of Western Science. But the existential approach has been relatively unknown in North America until recent years. The existential psychologists argue that the inflexibility of society, and society's adherence to mores and values that are losing their meaningfulness, as well as the problems that arise when a set of mores runs counter to basic human needs,

restricts the development of creativity. For instance, it has been pointed out that the old-fashioned child rearing methods are ways in which individuals are inhibited in the development of creativity. To avoid becoming unnecessarily embroiled in such philosophical arguments, the study is delimited to the degree to which rigidity affects performance, setting aside the question of the desirability of school achievement for future study.

To a large extent the word "achievement" has come to be associated with academic success; by choosing academic achievement as the area of concern, the necessary delineation is obtained. Thus the study concerns rigid personality characteristics that appear to be significant to academic achievement.

Rigidity might be defined as the tendency to achieve by repressive, conforming, pedantic behavior.

PERSONALITY RIGIDITY AND ACHIEVEMENT

The Effects of Personality Development

The degree of rigidity displayed by an individual has a relationship to personality development. This is illustrated by Adorno et al (1950) in their study of the authoritarian personality. McCandless (1961) supports this contention having found that authoritarians develop from parents who are highly conforming to approved standards of behavior. It is from the strong positive reinforcement that the child develops consistent methods. Rubenowitz (1963) agrees

by stressing that a child learns to conceive his environment and react to it in a manner to which he has been positively reinforced. However, in addition to this, Rubenowitz indicates that the child also learns from the degree to which his parents disapprove of certain ways of reacting and how such reactions must be repressed. Thus he feels that rigidity determined by early environmental experiences stems from a need to organize the world around us so that it is experienced as fairly stable and secure. Those who do not develop in this manner are apt, perhaps, to be left in a whirl of randomness. These may be the persons who Harsh and Schrickel (1950) suggest have been exposed to a variegated environment, who make no effort to achieve a unified concept of the self or to be consistent from one situation to another. Harsh and Schrickel (1950) state:

> Perhaps the only dependable thing about such persons is the readiness with which they adapt to changing situations and subculture patterns, making long term predictions practically impossible in contrast to the situation for a person who carries within himself a rather rigid pattern of adjustment which will be recognizable in any environment. (p. 417-418)

It should be noted that while there is no intention of considering rigidity as necessarily lying at the opposite end of a continuum from flexibility, in everyday experience it may be that one can differentiate the achiever, who is more rigidly organized, from the underachiever who is randomly disorganized. It seems that in many respects this form of rigidity is part of a process of reduction of randomness and therefore might be considered a positive factor in adjustment

within society as we know it. This might be further illustrated by the demands for rigid organization that were made prior to and during the current research project. Professors and graduate students undertaking research are obliged to develop a rigid organization of their efforts, even to the manner in which they report their findings. Just as Frenkel-Brunswik, as found in Adorno et al (1950), points out that authoritarian values (at least for middle class identification) deal with conformity and loyalty to ingroup standards in books of etiquette and military rules of behavior, so is rigid behavior imposed on researchers by books of form and style in thesis writing, research design, and others. Thus if rigidity, as it has been described in this study, is not considered a positive factor, then we should consider the present demands of graduate research procedure with a negative connotation. Of course, such rigidity in its extreme may suggest a form of neurotic performance just as the comment by Harsh and Schrickel (1950), discussed above, implies, that flexibility in its extreme provides such a disability.

The literature in this area suggests that a large measure of the rigid behavior displayed by an individual could be attributed to his personality development. Thus personality rigidity is considered by the present writer as a most significant variable.

The Relation of Personality Rigidity to Cognitive Functioning

Since the form of rigidity under study is considered to stem from the development of the personality, the relation to cognitive

functioning becomes important because of its implications within the criterion of academic achievement. Rokeach (1960) hypothesizes that:

> When ambivalence toward parents is not permitted expression it leads to both anxiety and to a narrowing of possibilities for identification with persons outside the family. Both, in turn, are interpreted as leading to the development of closed belief systems. (p. 365)

With a narrowing of possibilities for identification with persons outside the family, greater introversion and perhaps greater conformity can be expected with closed belief systems. However Rokeach considers the expression from closed belief systems as being "dogmatic," which appears to take in much more than merely being rigid. In dealing with the problem of thinking and the relationship between personality and problem solving, he describes rigidity as, "resistance to change of single beliefs (or sets or habits)," and dogmatism as, "resistance to change of systems of beliefs." The former involves analytic thinking, the latter, synthesis. He considers problem solving as part of such personality dimensions; that is, he accepts cognitive functioning (thinking, remembering, and perceiving) as related to and as part of his concept of dogmatism. However in dealing with this aspect of Rokeach's work, Rubenowitz (1963) finds no such a relationship and concludes that ideological orientations are distinguishable from conceptual behavior in intellectual problem solving. With this one exception, Rubenowitz finds his concept of rigidity, taking in personality and social factors, is very similar to the dogmatism of Rokeach.

It appears practical in this study to be guided by Rubenowitz's

findings and therefore personality factors are considered whereas measures of cognitive rigidity are excluded. However it should be kept in mind, as Rubenowitz hints, that where personality is productive of emotions, it is apt to have some effect on conceptual behavior in intellectual problem solving.

Personality Differences and Academic Achievement

There are indications of personality differences between achievers and underachievers from studies dealing with the Minnesota Multiphasic Personality Inventory (MMPI) and other personality tests. Altus (1948) finds that underachievers differ on at least one trait, that of Hypomania; that is, they show a tendency for marked overproductivity in thought and action at the expense of rational behavior. The findings of Owens and Johnson (1949) lend support to this by showing that the underachiever tends to become overly socially involved. They also refer to a study by Heston (1947) who finds overachievers socially introverted. While Owens and Johnson (1949) note that the existence of the neurotic-psychotic tendencies they found in underachievers may have arisen as a consequence of poor achievement rather than being causes of it, McQuary and Truax (1955) find that underachievers tend to have higher mean scores on MMPI scales. Jenson (1958) further discovered that non-achievers of low scholastic ability are significantly higher than achievers of low scholastic ability, at the college level, on MMPI scales such as F, Sc, and Ma. The trend of these studies indicates

that underachievers display more abnormal personality development than achievers. It appears that underachievers are marked by over-productivity in thought and action, a randomness associated with being highly concerned with personal pleasure and social diversion, and a tendency towards neurotic-psychotic involvement. At the other extreme, the overachiever appears socially introverted (Heston, 1947). Two questions that follow for future research are first, whether the normal achiever fills the happy medium and second, whether in terms of personality rigidity, the underachiever is prone to be the subject of a certain randomness or unordered and undirected behavior (non-rigid) at the expense of reasonable social adjustment, whereas the over-achiever is too introverted for adequate social adjustment (highly rigid).

Personality Tendencies and Academic Achievement

Using the Edwards Personal Preference Schedule (EPPS), Krug (1959) finds that overachievers score significantly higher on the Achievement, Order and Endurance scales and significantly lower than underachievers on the Affiliation and Heterosexuality scales. That overachievers score higher than underachievers on the Order scale is confirmed by Deiner (1960). In dealing with academic underachievement among Faculty of Education students at the University of Alberta, Seaman (1960) finds underachievers to be significantly characterized and differentiated by the manifest needs for Dominance and Affiliation, and to some extent by the need for Change. Overachievers, on the other

hand, are found to be characterized by the needs for Achievement, Order and Endurance.

In dealing with the variable of conformity, Coleman (1960) relates overachievers to a lower score on the Change scale of the EPPS (overachievers feel less need than underachievers to change activities frequently). On the other hand, they are less active in aesthetic activities than high ability underachievers. Dealing with the same topic, Lambert (1962) uses the Change scale as a measure of the individual's need to seek out the new and different. He considers that a tendency to adhere to established procedures is implied by conformity and concludes that Coleman's interpretation corresponds with the findings of Field, Brown and Frankel. Field (1954) finds that high achievers score markedly higher on personality measures of conformity. Brown (1954) finds that underachievers are unwilling to conform. Frankel (1960) finds that overachievers are more conforming than underachievers. While the assumption, thus far, is acceptable, Lambert's interpretation of Ward's (1960) findings cannot be accepted as reasonable. Ward (1960) finds that low achieving students express a higher interest in the familiar and stable situations while high achievers prefer more abstract situations. The objection is to Lambert's interpretation of this finding as meaning that overachievers are more flexible than underachievers. Lambert seems to confuse "needs" dealt with in the other studies with "expressed interests" dealt with by Ward. It might be possible to speculate that the high expressed

interests in abstract situations suggest that overachievers are more flexible in thought but not that expressed interests can override the clear evidence of needs that are more related to the existence of the tendencies that govern behavior. Thus it is conceivable that overachievers, whose tendencies associated with personality rigidity help them achieve, are in effect very flexible in thought. The probability that some people can be rigid in behavior and flexible in thought, however, is not considered for examination in the present research project. To clarify the situation with regard to Lambert's interpretation still further, it is suggested that what a person expresses need not be predictive of how he behaves. Through years of interviewing and counselling it has become clear to the writer that how the interviewee tends to respond depends ultimately on what he wants from the interview and what he expects of it; in the same way his expressions of interest during test or experimental situations are apt to be more predictive of what he wishes to achieve at the moment or what he seeks to defend or conceal in his behavior, than of his actual behavior. Still further, a person can quite honestly describe a physical stimulus rather than the actual conscious experience.

One further reference of interest is that of Ringness (1965). While Ringness finds no difference in conformity in grade nine subjects, he does discover that the unsuccessful students have greater motive to affiliate and less motive to achieve.

In the studies referred to, underachievers display greater need

for Dominance, Affiliation, Heterosexuality, and Change. They also show evidence of being more active in aesthetic activities. The latter may imply that the overachiever is more directed towards the moral and the useful. Thus, the lesser need for Change is in the direction of achievement and overachievers are seen to possess greater needs for Achievement, Order and Endurance and to display a greater degree of conformity. They may develop conformity in order to obtain greater congruity and compliance in behavior.

Summary of Relationship Between Academic Achievement and Rigidity

From what has been said to this point, it becomes possible to render a tentative explanation of the behavioral differences between achievers and underachievers.

It appears that personality development produces at least two extremes. First, those who develop a strong need to organize their own little world so that they experience it as fairly stable and secure. They develop a rather rigid pattern of adjustment which, it has been suggested by Harsh and Schrickel (1950), will be recognized in any environment. They show greater introversion, a high degree of conformity and have closed belief systems. They are rigid in personality. Second, there are those who have grown up with a diversified outlook, who enliven their lives by variety, and make no effort to develop a unified concept of the self. They are not consistent from one situation to another, are seen as undependable, and are perhaps overly

adaptable to changing situations to the extent that their behavior is largely unpredictable. They are socially extroverted and non-conformist in outlook.

In dealing with personality and tendency differences related to academic achievement two extreme patterns are found. First, the overachiever who appears socially introverted, more directed to the moral and/or the useful, and displays needs for achievement, order and endurance. He is very conforming to the rules and regulations and to the ways of society as a whole. Second, the underachiever who appears hypomanic and so prone to be extremely involved socially and highly interested in aesthetic activities. He is characterized by needs for dominance, affiliation, and change and appears to have greater neurotic-psychotic tendencies, at least on personality tests. He is perhaps best singled out by randomness and undirected behavior and is more non-conforming to the rules laid down by society.

From these descriptions it seems evident that the overachiever falls in the group characterized by rigid personality and that the underachiever falls in the group characterized by non-rigid personality. Thus it is possible to consider the underachiever (one whose grade XII average is lower than expected from his results on an academic ability test) as non-rigid and the overachiever (one whose grade XII average is higher than expected from his capacity measured on an academic ability test) as extremely rigid in behavior, postulating that the normal achiever (one whose grade XII average is about what is expected from

his capacity measured on an academic ability test) is somewhere in between. If that is the case, then the normal achiever must display at least a moderate degree of personality rigidity to adjust well to the structured society. In terms of rigidity as it is being considered in this study, the normal achiever has the best social adjustment since the underachiever is seen to be the subject of a certain randomness and undirected behavior (non-rigid) at the expense of reasonable social adjustment (highly extroverted), whereas the overachiever is completely ordered and directed in behavior (extremely rigid) at the expense of adequate social adjustment (introverted).

Of the research considered thus far, the study by Seaman (1960), already mentioned, appears to be the most closely related research to provide suggestions for design and method. Accordingly, the decision is made to reverse Seaman's approach to gain better control of the variables involved; that is, to see if persons possessing the particular personality patterns could be identified and predicting a difference in achievement. Thus students who score very high are compared with students who score very low on each measure of rigidity, predicting that those who score high will display greater academic achievement than those who score low. In this manner, students high on personality rigidity can be shown to achieve better academically than those who score low on personality rigidity.

Seaman compares the results of his personality testing with ability testing undertaken in the previous year. While this should

not have a serious effect on his findings, it nevertheless would suit more exacting standards to complete both at the same time. Thus it was decided to implement this change. Seaman also fails to control for sex and subsequent literature suggests he should have done so. Engel (1964) finds a different structure of variables related to achievement of each sex. The related personality functions for boys are seen to have a self or "inner" orientation, while those relating to girls appear to be other or "outward" oriented. Barton (1964) further finds that, in his sample, girls achieve higher grade point averages than boys. From this evidence it was decided to control for sex differences.

HYPOTHESES

Personality rigidity seems to stem largely from reinforcement of consistent childhood behavior by parental approval and disapproval. Two extremes of behavior appear; random, undirected (non-rigid) behavior and ordered, directed (highly rigid) behavior. The literature reviewed above suggests that the former coincides with tendencies of the underachiever (needs for Dominance, Affiliation, Heterosexuality and Change) whereas the latter appears to coincide with tendencies of the overachiever (needs for Achievement, Order, Endurance and Conformity).

It may be conjectured that the normal achiever has the best social adjustment. The underachiever is subject to a certain randomness and undirected behavior (non-rigid) at the expense of reasonable social adjustment (highly extroverted), whereas the overachiever is completely ordered and directed in behavior (highly rigid) at the

expense of adequate social adjustment (introverted).

An evaluation of the studies reviewed in this chapter lead the present author to hypothesize that personality rigidity provides for a consistent and directed approach to learning.

Hypothesis I

Beyond the effect of academic ability, students who score low on the Barron Complexity Scale will achieve higher grade XII averages than students who score high on the Barron Complexity Scale.

Hypothesis II

Beyond the effect of academic ability, students who score high on the Order scale will achieve higher grade XII averages than students who score low on the Order scale.

Hypothesis III

Beyond the effect of academic ability, students who score low on the Change scale will achieve higher grade XII averages than students who score high on the Change scale.

Hypothesis IV

Beyond the effect of academic ability, students who score high on the Endurance scale will achieve higher grade XII averages than students who score low on the Endurance scale.

Hypothesis V

Beyond the effect of academic ability, students who score high on the PR(B) scale will achieve higher grade XII averages than students who score low on the PR(B) scale.

CHAPTER III

RESEARCH RELATED TO TESTS OF RIGIDITY

The previous chapter has outlined the general research concerning the relationship of rigid personality characteristics to academic achievement. In this chapter suitable instruments to measure personality rigidity are discussed. No studies were located that relate directly to the relationship of personality rigidity to academic achievement and so inferences are made on the basis of research in associated areas. In the literature reviewed, the tests employed are usually broader and less clearly defined than is desired for this project. For instance, the F scale in studies by Adorno et al (1950) was found to include attitudes of a fascistic and political nature. Rokeach's Dogmatism scale was reported to include cognitive as well as personality variables, while the Gough-Sanford Rigidity Scale used by Rokeach (1960) to measure specific problem solving tasks is too narrow to include the personality factors that required study in this instance. Rubenowitz (1963) uses a Swedish version of the Gough-Sanford Rigidity Scale and finds that pedantic habit stereotypy has the strongest correlation with what he called EPPS Task Rigidity (Endurance, Order, and Deference scales of the Edwards Personal Preference Schedule). He uses this scale as a measure of resistance to change in single beliefs or sets, arguing that anticipated threat might be behind this resistance; that is, the new and the unknown is apt to be experienced as threatening

by rigid people, since it does not fit in with their established pattern. This task rigidity is similar to what has been found using the same test on this continent. The results are discussed in Chapter II under Personality Tendencies and Academic Achievement. The most common trends on this continent, however, are that overachievers are characterized by greater needs for Order and Endurance and lesser need for Change than underachievers. Thus, for achievement, three characteristics appear involved with regard to personality rigidity: Order, Direction, and Drive to Completion. Order would provide for the organization of our actions through which we could obtain meaning from a random set of circumstances (or facts). Direction (less need for Change) would provide for our actions to continue towards the aim or goal so as not to be distracted by irrelevant detail (or other aims or goals). Drive to Completion (Endurance) would provide the staying power to continue until the goal or state of meaningfulness has been reached. The measure of Deference used in Rubenowitz's EPPS Task Rigidity may well relate to the findings on this continent that overachievers display a greater degree of conformity.

Chown (1959) describes some 47 tests of rigidity which she groups under the titles of Einstellung tests, Concept Formation tests, Personality tests, and others. She recognizes the small overlap between experiments and the difficulty in deriving just what the tests measure. She states:

> Where two people have used the same two tests, their results hardly ever agree and it is hard to say whether this is due to faults in the tests or discrepancies in the conditions, administration, and scoring of the tests. (p. 109)

For the most part the tests she described do not seem as appropriate to the study at hand as a test developed by Barron and the measures of Endurance, Order and Change mentioned above.

Barron (1953, 1963) is concerned with creativity. He deals initially with the Welsh Figure Preference Test. He discovers that a dislike for complex figures is related to such characteristics as rigidity, constriction, social conformity, subservience to authority, political-economic conservatism, and ethnocentrism. A liking for complex figures, on the other hand, points to originality, verbal fluency, expression as opposed to repression of impulse, and to cathection of intellectual activity. Barron then finds that the Welsh Figure Preference Test relates significantly to a measure of independence of judgment called the Barron-Welsh Art Scale. He discusses a bipolar personality dimension of complexity-simplicity. The Barron-Welsh Art Scale is found to measure "Complexity of the Independents" with a high score and "Simplicity of the Yielders" with a low score. The complexity-simplicity dimension is described by Barron (1963); those high on complexity as flexible, independent, impulsive, non-conforming, and mentally quick and those low on complexity as rigid, repressive, conforming, and conventional. Checking the 86 true-false items against complex and simple groups, Barron comes up with a 50

item questionnaire that is currently referred to as the Barron Complexity Scale. In addition to what he calls "the picture of easy and uncomplicated simplicity" (p. 191), measured by a low score, Barron finds that staff ratings describe low scorers as being characterized by such factors as Good Judgment, Adjustment, and Abundance Values. Adjustment is defined as "getting along in the world as it is, adequate degree of social conformity, capacity to adapt to a wide range of conditions, ability to fit in" (p. 191). On the other extreme, the complex person is found to be unadjusted; not fitting in very well with the world as it is. Barron points out, however, that the unadjusted "sometimes perceives that world more accurately than does his better adjusted fellow" (p. 191). The Barron Complexity Scale, measuring the complex person's greater flexibility, is found to correlate -.35 with rigidity defined as "inflexibility of thought and manner; stubborn, pedantic, unbending, firm." (p. 193). Thus a low score on the scale measures rigidity.

Conklin (1965) finds that underachievers score higher (more irrational beliefs) on the Irrational Ideas Inventory. He also finds that the inventory has a positive relationship to the Barron Complexity Scale and so the underachievers would score highly on the latter scale. Barron (1963) finds that complex scorers are apt to be above average in intelligence and that a liking for complex figures points to cathection of intellectual activity; yet from the review of the literature it seems that those with a liking for simplicity, the more rigid, are apt to

achieve more for their level of ability. It is postulated therefore, that a high degree of intellect and a large amount of intellectual energy are not sufficient by themselves to assure effective performance. Certain rigid personality factors seem to be essential to guide the person's activity and behavior in a constructive, orderly fashion so that the person can achieve at a level consistent with his intellectual potential. The results of studies dealing with items from the Edwards Personal Preference Schedule (EPPS) suggest that the Order, Endurance, and Change scales provide an instrument to measure this type of personality rigidity postulated to be required for academic achievement in today's Western society. This type of personality rigidity is defined as: The tendency to achieve by behavior showing high degrees of order, endurance and direction. Such personality rigidity is included in this study. To provide greater depth, the Barron Complexity Scale (BCS), with a low score measuring rigidity defined as "inflexibility of thought and manner, stubborn, pedantic, unbending, firm," is included to provide a similar and concurrent measure. The Barron Complexity Scale relates negatively to rigidity and the underachiever is apt to score highly thereon. A low score is considered to be a measure of rigidity.

For the purpose of further depth, a scale composed of seven items of the MMPI, purported to measure "Rigid Moral Code, Non-Adjustive, Inflexible Viewpoint," is also included and referred to as the PR (B) Scale.

CHAPTER IV

PROCEDURE

As previously pointed out in the theoretical framework, this study is concerned with deriving a better understanding of the relationship of personality rigidity to academic achievement.

Five measures of personality rigidity were administered in order to identify groups possessing high and low degrees of rigid personality characteristics. An academic ability test was administered and the results used in controlling for academic ability in attained grade XII average. The adjusted grade XII average so obtained became the measure of academic achievement in comparing the groups of students high and low in rigidity.

The design was set up to test five basic hypotheses, one for each measure of rigidity. This provides for comparisons among the five measures of rigidity. Each of these hypotheses was tested for male and female subjects separately as well as together in a combined sample in order to allow for probable sex differences.

SAMPLE

Students enrolling as freshmen at the University of Alberta are required to write the Cooperative Academic Ability Test during registration week. In September 1966 these students were asked also to write the other tests necessary for the conduct of this study. These

2,293 first-year students are the population from which extreme group samples were drawn.

TESTS

All subjects were administered the following tests by the investigator except the Cooperative Academic Ability Test which was administered in his presence by a colleague from the Student Counselling Services of the University of Alberta:

College Academic Ability Test (Form A)

Barron Complexity Scale

Edwards Personal Preference Schedule

PR(B) Scale

The first test listed was used as a measure of control for academic ability. The remainder of the tests were used separately as measures of personality rigidity.

The Cooperative Academic Ability Test

The CAAT provides an estimate of verbal and mathematical ability for superior grade XII students. The total general ability score obtained was used for the purpose of controlling for academic ability.

The Handbook for the Cooperative Academic Ability Test (1964) indicates that the purpose of the CAAT is comparable to that of the School and College Ability Tests (SCAT), the Scholastic Aptitude Test

(SAT), and the American Council on Education Psychological Examinations (ACE). There is greater emphasis on power than speed in the CAAT, as is characteristic of the first two tests (SCAT and SAT). Even though there is less emphasis on power on the ACE, total scores on form A of the CAAT are reported in the handbook as correlating .79 with total scores on the ACE.

The Barron Complexity Scale

The BCS was discussed at some length in Chapter III. A copy of the scale can be seen in Appendix A with keyed responses in the direction of complexity. Barron (1963) found the following relationships:

1. Preference for complexity is related to rapid personal tempo, verbal fluency, impulsiveness, and expansiveness.

2. Preference for complexity is related negatively to rigidity, control of impulse by repression, social conformity, ethnocentrism, and political conservatism.

3. Preference for complexity is related positively to independence of judgement, originality, and breadth of interest.

Complex scorers are seen as clever, delightful, possessing wide interests, and mentally quick. Low complexity scorers are seen as conventional.

Barron reports a Kuder-Richardson odd-even reliability of .54 and a test-retest reliability of .74 for the scale.

It should be noted that a low score on the BCS deals more with

the type of rigidity concerning social conformity (including the realm of ideas and beliefs) than the scales of the EPPS, which appear to deal with behavioral rigidity.

The Edwards Personal Preference Schedule

The EPPS provides three measures to be treated separately as measures of personality rigidity.

The three personality variables used in this study are described in the Manual for the Edwards Personal Preference Schedule (1959) to disclose the following manifest needs.

Order. This scale is associated with manifest needs:

> To have written work neat and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly, to make advance plans when taking a trip, to organize details of work, to keep letters and files according to some system, to have meals organized and a definite time for eating, to have things arranged so that they run smoothly without change (p. 11).

Change. This scale is associated with manifest needs:

> To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine, to experiment and try new things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions (p. 11).

Endurance. This scale is associated with manifest needs:

> To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late working in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work (p. 11).

The EPPS was used as it appeared to be the best available standardized instrument for measuring the personality variables related to the type of rigidity under discussion.

In assessing validity the test authors considered the self- and peer-rating techniques but in preference relied on correlations with other scales such as the Guilford-Martin Personnel Inventory and the Taylor Manifest Anxiety Scale. These findings, relating to the validity of the test, are presented in the manual.

Reliability of the test has been shown by both the split-half and test-retest methods; reliability coefficients for the test as a whole and the subscales used in this study, run well into the seventies and eighties (EPPS Manual, 1959; p. 19).

A copy of the Edwards Personal Preference Schedule can be seen in Appendix B and responses in the direction of high scores on Order, Change, and Endurance are listed in Appendix C.

The PR(B) Scale

The PR(B) scale is composed of items from the Minnesota Multiphasic Personality Inventory (Items: 93, 109, 117, 124, 313, 316, and 319). These items form part of the Paranoia scale and measure "Rigid Moral Code, Non-adjustive, Inflexible Viewpoint."

A copy of the scale items can be seen in Appendix D with keyed responses in the direction of high rigidity. The scale seems to be one of moral rigidity; that is, not being willing to accept the

existence of lying, cheating, stealing, and indifference in social interactions. Perhaps it measures rigid ideological moral beliefs.

ACCUMULATION AND TREATMENT OF DATA

Answer sheets were electronically scored. A deck of data cards was produced containing the scores from the five rigidity measures together with identifying information. The deck of cards containing rigidity measure scores was collated with two other decks, a deck from Student Counselling Services containing CAAT score results and a deck containing grade XII averages.

Information from the collated decks was transferred to a computer tape and a print-out obtained.

The scores for each measure of rigidity were inspected on the print-out sheet. In this manner, cut-off scores for extreme groups approximating the highest and lowest one hundred subjects on each scale were ascertained. Table I outlines the cut-off scores.

TABLE I

CUT-OFF SCORES FOR EXTREME GROUPS ON MEASURES OF RIGIDITY

Test	High Rigidity	Low Rigidity
BCS	Below 13	Above 29
Order	Above 17	Below 4
Change	Below 10	Above 21
Endurance	Above 20	Below 6
PR(B)	Score of 7	Score of 0

The actual numbers in these extreme groups are given in Table II.

TABLE II

SAMPLE SIZE OF EXTREME GROUPS ON MEASURES OF RIGIDITY

Test	Group	High Rigidity	Low Rigidity
BCS			
	Females	72	47
	Males	66	53
	Total	138	100
Order			
	Females	41	46
	Males	63	64
	Total	104	110
Change			
	Females	65	77
	Males	108	49
	Total	173	126
Endurance			
	Females	47	67
	Males	90	77
	Total	137	144
PR(B)			
	Females	40	35
	Males	42	82
	Total	82	117

An analysis was undertaken on the computer. Each extreme group sample was considered in three ways: first, for combined group of both sexes, second, for males alone, and third, for females alone. For each of these groupings an analysis of covariance based on high and low

groups for each measure of rigidity was undertaken. Differences were thereby determined between high rigidity and low rigidity groups on grade XII average adjusted by CAAT scores.

Using the CAAT scores as covariate provided control for academic ability. In this manner it was possible to determine whether rigidity is a factor in academic achievement above and beyond the effect of academic ability.

CHAPTER V

ANALYSIS OF DATA

This study first identifies subjects possessing certain personality characteristics and then explores related differences in academic achievement. In this manner it is possible to ascertain whether such personality characteristics in students have an effect on their academic achievement. Academic ability is controlled in order to avoid the confusion of earlier studies described by Seaman (1960). He states:

> Generally speaking, however, it is quite obvious that the reported investigations of the problem of the relation of these personality variables to academic underachievement and overachievement have not distinguished low-ability from high-ability students among low achievers and high achievers (p. 93-94).

In view of Engel's (1964) finding of a different structure of variables relating to achievement of each sex, control of the sex variable is provided for in this study. Each measure of rigidity is considered separately to allow for comparisons to be made among them. Control is made more precise by subjecting the data to analysis of covariance, controlling for academic ability (CAAT score).

BARRON COMPLEXITY SCALE

Hypothesis I

Beyond the effect of academic ability, students who score low on the Barron Complexity Scale achieve higher grade XII averages than

students who score high on the Barron Complexity Scale.

Combined Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table III.

TABLE III

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE BCS

Group	N	Adjusted Means
Low	138	69.07
High	100	67.62
Difference		1.45

An analysis of covariance, controlling for academic ability (CAAT scores), was performed to test the significance of the difference between grade XII averages of low and high groups on the BCS. A summary of this analysis of covariance is presented in Table IV.

The difference between adjusted means would only be significant if the .10 level of confidence was accepted, therefore Hypothesis I is not confirmed.

TABLE IV

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE BCS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	95.71	2.79	$P < 0.096$
Within Groups	235	34.26		

Male Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table V.

TABLE V

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF MALE SUBJECTS ON THE BCS

Group	N	Adjusted Means
Low	66	68.13
High	53	67.72
Difference		.41

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of low and high groups on the BCS. A summary of this analysis of covariance is presented in Table VI.

TABLE VI

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF MALE SUBJECTS ON THE BCS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	4.18	0.13	$P < 0.721$
Within Groups	116	32.71		

The difference between adjusted means is not significant and therefore Hypothesis I is not confirmed for male students.

Female Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table VII.

TABLE VII

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF FEMALE SUBJECTS ON THE BCS

Group	N	Adjusted Means
Low	72	70.00
High	47	67.40
Difference		2.60

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of low and high groups on the BCS. A summary of this analysis of covariance is presented in Table VIII.

TABLE VIII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF FEMALE SUBJECTS ON THE BCS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	143.02	4.16	$P < 0.044$
Within Groups	116	34.39		

The difference between the adjusted means is significant at the .05 level of confidence and Hypothesis I is confirmed for female students. Female students who score low on the BCS achieve higher grade XII averages than female students who score high on the BCS, when academic ability is controlled.

ORDER

Hypothesis II

Beyond the effect of academic ability, students who score high on the Order scale will achieve higher grade XII averages than students who score low on the Order scale.

Combined Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table IX.

TABLE IX

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE ORDER SCALE OF THE EPPS

Group	N	Adjusted Means
High	104	69.06
Low	110	66.93
Difference		2.13

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Order scale. A summary of this analysis of covariance is presented in Table X.

TABLE X

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE ORDER SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	211.32	5.84	$P < 0.017$
Within Groups	211	36.19		

The difference between adjusted means is significant at the .02 level of confidence and Hypothesis II is confirmed. Students who score high on the Order scale achieve higher grade XII averages than students who score low on the Order scale when academic ability is controlled.

Male Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XI.

TABLE XI

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE ORDER SCALE OF THE EPPS

Group	N	Adjusted Means
High	63	69.17
Low	64	66.46
Difference		2.71

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Order scale. A summary of this analysis of covariance is presented in Table XII.

TABLE XII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE ORDER SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	211.01	5.22	$P < 0.024$
Within Groups	124	40.43		

The difference between adjusted means is significant between the .02 and .05 levels of confidence and Hypothesis II is confirmed for male students. Male students who score high on the Order scale achieved higher grade XII averages than male students who score low on the Order scale when academic ability is controlled.

Female Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XIII.

TABLE XIII

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE ORDER SCALE OF THE EPPS

Group	N	Adjusted Means
High	41	68.98
Low	46	67.50
Difference		1.48

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Order scale. A summary of this analysis of covariance is presented in Table XIV.

TABLE XIV

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE ORDER SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	37.97	1.27	$P < 0.262$
Within Groups	84	29.81		

The difference between the adjusted means is not significant and so Hypothesis II is not confirmed for female students.

CHANGE SCALE

Hypothesis III

Beyond the effect of academic ability, students who score low on the Change scale will achieve higher grade XII averages than students who score high on the Change scale.

Combined Sample

Mean grade XII averages adjusted for level of academic ability measured by CAAT scores, are shown in Table XV.

TABLE XV

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS

Group	N	Adjusted Means
Low	173	68.87
High	126	68.25
Difference		0.62

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of low and high groups on the Change scale. A summary of this analysis of covariance is presented in Table XVI.

TABLE XVI

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	26.76	0.712	$P < 0.399$
Within Groups	296	37.56		

The difference between adjusted means is not significant and Hypothesis III is not confirmed.

Male Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XVII.

TABLE XVII

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF MALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS

Group	N	Adjusted Means
Low	108	68.96
High	49	67.09
Difference		1.87

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of low and high groups on the Change scale. A summary of this analysis of covariance is presented in Table XVIII.

TABLE XVIII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF MALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	115.20	2.64	$P < 0.106$
Within Groups	154	43.61		

The difference between adjusted means is not significant and Hypothesis III is not confirmed for male students.

Female Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XIX

TABLE XIX

ADJUSTED GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF FEMALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS

Group	N	Adjusted Means
Low	65	68.59
High	77	69.10
Difference		-0.51

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of low and high groups on the Change scale. A summary of this analysis of covariance is presented in Table XX.

TABLE XX

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR LOW AND HIGH GROUPS OF FEMALE SUBJECTS ON THE CHANGE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	9.09	0.31	$P < 0.577$
Within Groups	139	29.05		

The difference between the adjusted means is not significant and so Hypothesis III is not confirmed for female students.

ENDURANCE SCALE

Hypothesis IV

Beyond the effect of academic ability, students who score high on the Endurance scale will achieve higher grade XII averages than students who score low on the Endurance scale.

Combined Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXI.

TABLE XXI

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS

Group	N	Adjusted Means
High	137	68.84
Low	144	67.11
Difference		1.73

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Endurance scale. A summary of this analysis of covariance is presented in Table XXII.

TABLE XXII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	206.96	6.14	$P < 0.014$
Within Groups	278	33.68		

The difference between adjusted means is significant between the .01 and .02 levels of confidence and Hypothesis IV is confirmed. Students who score high on the Endurance scale achieve higher grade XII averages than students who score low on the Endurance scale when academic ability is controlled.

Male Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXIII.

TABLE XXIII

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS

Group	N	Adjusted Means
High	90	68.70
Low	77	66.99
Difference		1.71

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Endurance scale. A summary of this analysis of covariance is presented in Table XXIV.

TABLE XXIV

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	121.22	3.66	$P < 0.057$
Within Groups	164	33.07		

The difference between adjusted means is not quite significant at the .05 level of confidence and so Hypothesis IV is not well confirmed for male students.

Female Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXV.

TABLE XXV

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS

Group	N	Adjusted Means
High	47	69.20
Low	67	67.16
Difference		2.04

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the Endurance scale. A summary of this analysis of covariance is presented in Table XXVI.

TABLE XXVI

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE ENDURANCE SCALE OF THE EPPS, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	105.21	3.20	$P < 0.076$
Within Groups	111	32.90		

The difference between adjusted means would only be significant were this level of confidence acceptable but does not meet the .05 level accepted in this study, thus Hypothesis IV is not well confirmed for female students.

PR(B) SCALE

Hypothesis V

Beyond the effect of academic ability, students who score high on the PR(B) scale will achieve higher grade XII averages than students who score low on the PR(B) scale.

Combined Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXVII.

TABLE XXVII

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI

Group	N	Adjusted Means
High	82	67.57
Low	117	67.33
Difference		0.24

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the PR(B) scale. A summary of this analysis is presented in Table XXVIII.

TABLE XXVIII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF COMBINED MALE AND FEMALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	2.48	0.076	$P < 0.783$
Within Groups	196	32.64		

The difference between adjusted means is not significant and so Hypothesis V is not confirmed.

Male Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXIX.

TABLE XXIX

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI

Group	N	Adjusted Means
High	42	67.54
Low	82	67.18
Difference		0.36

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the PR(B) scale. A summary of this analysis of covariance is presented in Table XXX.

TABLE XXX

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF MALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	3.61	0.100	$P < 0.753$
Within Groups	121	36.18		

The difference between adjusted means is not significant and Hypothesis V is not confirmed for male students.

Female Sample

Mean grade XII averages adjusted for level of academic ability, measured by CAAT scores, are shown in Table XXXI.

TABLE XXXI

ADJUSTED GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI

Group	N	Adjusted Means
High	40	67.38
Low	35	67.92
Difference		-0.54

An analysis of covariance, controlling for academic ability (CAAT scores) was performed to test the significance of the difference between grade XII averages of high and low groups on the PR(B) scale. A summary of this analysis of covariance is presented in Table XXXII.

TABLE XXXII

SUMMARY OF ANALYSIS OF COVARIANCE OF GRADE XII AVERAGE MEANS FOR HIGH AND LOW GROUPS OF FEMALE SUBJECTS ON THE PR(B) SCALE OF THE MMPI, CONTROLLING FOR ACADEMIC ABILITY

Source of Variation	df	Mean Square	F	Significance
Between Groups	1	5.41	0.216	$P < 0.643$
Within Groups	72	24.99		

The differences between adjusted means is not sufficiently significant and so Hypothesis V is not confirmed for female students.

SUMMARY

Analysis of covariance procedure was carried out in a direct test of five hypotheses dealing with grade XII averages adjusted by controlling for level of academic ability.

Results of the analysis are summarized as follows:

	Hypothesis	Sample	Results
I.	Beyond the effect of academic ability, students who score low on the Barron Complexity Scale will achieve higher grade XII averages than students who score high on the Barron Complexity Scale.	Combined	Not Confirmed
		Male	Not Confirmed
		Female	Confirmed
II.	Beyond the effect of academic ability, students who score high on the Order scale will achieve higher grade XII averages than students who score low on the Order Scale.	Combined	Confirmed
		Male	Confirmed
		Female	Not Confirmed
III.	Beyond the effect of academic ability, students who score low on the Change scale will achieve higher grade XII averages than students who score high on the Change scale.	Combined	Not Confirmed
		Male	Not Confirmed
		Female	Not Confirmed
IV.	Beyond the effect of academic ability, students who score high on the Endurance scale will achieve higher grade XII averages than students who score low on the Endurance scale.	Combined	Confirmed
		Male	Not Confirmed
		Female	Not Confirmed
V.	Beyond the effect of academic ability, students who score high on the PR(B) scale will achieve higher grade XII averages than students who score low on the PR(B) scale.	Combined	Not Confirmed
		Male	Not Confirmed
		Female	Not Confirmed

The following chapter includes an interpretation of the findings and a discussion of the conclusions and implications.

CHAPTER VI

SUMMARY AND IMPLICATIONS

The relationship of rigid personality to academic achievement is investigated in this study. The problem posed was: When academic ability is held constant, do students with a high level of rigid personality characteristics attain higher grade XII averages than do students with a low level of rigid personality characteristics?

To accomplish the intention of this study, freshmen at the University of Alberta were tested on an academic ability test and five measures of personality rigidity at the time of registration. These freshmen provided the population from which extreme groups of approximately the one hundred highest and one hundred lowest students on each measure of rigidity were drawn.

The design was set up to test hypotheses that, "beyond the effect of academic ability, students who have a high level of rigid personality characteristics will achieve higher grade XII averages than students with a low level of rigid personality characteristics," for each of the five measures of rigidity. Treating these measures separately allowed for comparisons to be made among them. In addition, each of the five hypotheses was tested for male and female subjects separately as well as together in a combined sample in order to consider sex differences.

Once high and low groups were identified for each measure of rigidity, their grade XII averages were subjected to analysis of co-variance, controlling for academic ability. The differences between these high and low groups on academic achievement (adjusted grade XII average) are discussed for each measure of rigidity.

Barron Complexity Scale

Hypothesis I was neither confirmed for the combined sample, nor for the male sample, however was confirmed for the female sample. Therefore the type of rigidity measured by a low score on the BCS bears a greater relationship in the achievement of female students than male students. While the same tendency appears for male students, the difference is not statistically significant. It is likely, therefore, that it is mainly the female trend that brings the difference in the combined sample close to significance ($p < 0.096$).

The following conclusion is drawn: Rigidity as measured by a low score on the BCS is positively related to the achievement of grade XII average by female students.

Order Scale

Hypothesis II was confirmed for both the combined sample and the male sample, however was not confirmed for the female sample. Therefore, the type of rigidity measured by a high score on the Order scale is positively related to achievement of grade XII average in general but has a greater positive relationship to academic achievement

of male students than female students.

The following conclusion is drawn: Rigidity as measured by a high score on the Order scale is positively related to achievement of grade XII average by students in general but has greater positive relationship to academic achievement of male students than female students.

Change Scale

Hypothesis III was not confirmed for the combined sample, the male sample, and the female sample. While the type of rigidity measured by a low score on the Change scale did not produce significant differences, it is possible to speculate that male students displaying such high rigidity (low need for change) tended to achieve more than male students who displayed low rigidity ($p < 0.106$). Just the opposite may be the case for the female sample, where female students displaying low rigidity (high need for change) may achieve less than high rigid female students.

While no conclusion can be drawn in this instance, the possibility of a significant sex difference should not be ignored.

Endurance Scale

Hypothesis IV was confirmed for the combined sample but was not confirmed for either the male or the female sample separately. Therefore the type of rigidity measured by a high score on the Endurance scale bears a significant positive relationship to the achievement of

students. The difference between high and low rigid groups of males approached significance ($p < 0.057$) while that of female groups showed a little less significance ($p < 0.076$).

The following conclusion is drawn: Rigidity as measured by a high score on the Endurance scale is positively related to the achievement of grade XII average by students in general but bears a somewhat greater relationship in the achievement of male students than female students.

PR(B) Scale

Hypothesis V was not confirmed for the combined sample, the male sample and the female sample. As for the Change scale, the direction by sex may differ; that is, high moral rigidity in males and low moral rigidity in female students were in the direction of greater achievement. However it must be emphasized that this possibility is little more than speculation and in no way suggests a significant finding.

The following conclusion is drawn: Rigidity as measured by a high score on the PR(B) scale does not have a significant degree of relationship to academic achievement.

Sex Differences

Table XXXIII illustrates the trends for students of each sex in this study.

TABLE XXXIII

SUMMARY OF PERFORMANCE OF STUDENTS SCORING HIGH ON RIGIDITY (AS COMPARED TO STUDENTS SCORING LOW ON RIGIDITY), BY SEX, ON ACADEMIC ACHIEVEMENT FOR EACH MEASURE OF RIGIDITY

Rigidity Scale	Adjusted Grade XII Average Male	Female
BCS (Low score)	Higher	Higher
P less than	0.721	0.044
Order scale (High score)	Higher	Higher
P less than	0.024	0.262
Change scale (Low score)	Higher	Lower
P less than	0.106	0.577
Endurance scale (High score)	Higher	Higher
P less than	0.057	0.076
PR(B) scale (High score)	Higher	Lower
P less than	0.753	0.643

The type of rigidity measured by a low score on the BCS bears a significant relationship to the academic achievement of female students but not to the academic achievement of male students. This type of rigidity is somewhat cognitive in nature and deals with the realm of ideas. It is related to social interests and how much the person is likely to conform and be part of society. The results seem to confirm the other or "outward" orientation Engel (1964) found for girls in achievement. Thus female students with inflexibility of

thought and manner, stubborn, pedantic, unbending ways and with good social adjustment (conforming), may achieve more highly for their level of academic ability than those who are not adjusted socially and not conforming. Apparently the female student who is not socially tied is more flexible but less likely to achieve to the degree expected from her level of academic ability.

The type of rigidity measured by the Order, Change, and Endurance scales of the EPPS seems to be more related to the academic achievement of male students. This type of rigidity is behavioral in nature and deals with what governs manner and approach to work; basic human needs. While only the Order scale difference reaches significance in the case of male students, the other two scales approach it. Of the three EPPS scales used, only the Endurance scale difference approaches significance for female students and the Change scale, if anything, suggests a slightly negative relationship to female academic achievement. These scales measure personality variables reflective of inner needs and therefore may confirm the findings of Engel (1964) that personality functions for boys in achievement had a self or "inner" orientation.

Comparison Of The Measures of Rigidity

The sex differences in the part played by different types of rigidity are evident. Rigid female students on the BCS achieve significantly more for their level of ability than their less rigid

counterparts. On the other hand, the scales that measure Personality Rigidity by high Order, low Change, and high Endurance, show more consistent trends throughout for male students than female students. Rigid male students achieve more for their level of ability than their less rigid fellow students; not all of the differences were significant but the fact that the differences were always in the same direction cannot be overlooked.

The Change scale, like the BCS, reflects a possible sex difference. The tendency for less rigid female students high on Change is to score in the direction of greater academic achievement. This also seems to agree with the other or "outward" orientation in female achievement.

While the types of rigidity measured in these scales differ in how they relate to the academic achievement of each sex, they are in some instances related to this. The same apparently cannot be said for the measure of moral rigidity in the PR(B) scale where the differences are not so apparent. In other words, there would seem to be many forms of rigidity, differing in the degree to which they relate to academic achievement. This, perhaps, illustrates the problem cited by Chown (1959) in deciding just what rigidity tests measure.

When students of both sexes are combined in the samples for each measure of rigidity, the rigid students in each case have higher adjusted grade XII averages than the less rigid students. However the differences on the PR(B) scale ($p < 0.783$) and the Change scale

($p < 0.399$) are clearly not significant. The difference on the BCS ($p < 0.096$) approaches significance while the differences on the Order ($p < 0.017$) and Endurance ($p < 0.014$) scales are clearly significant. This is seen to indicate that students who are rigidly ordered and enduring in their work tend to achieve more for their level of ability than their less rigid fellows. Perhaps this is saying that such students direct their energies away from interpersonal interactions into a rigid pattern of work or social conformity. It may well follow that the less rigid students escape their feelings and interpersonal interactions (rather than avoiding them as does the rigid student) by running away from close interpersonal dealings and seeking frequent change and diversion.

Summary of Conclusions

The conclusions drawn from this study are:

1. There is some evidence that personality rigidity, particularly as defined by measures of Order and Endurance, has a positive relationship to academic achievement.

2. Rigid socially-conforming characteristics, as measured by a low score on the Barron Complexity Scale, in female students, have a positive relationship to academic achievement.

3. Rigid self-governing manner and approach to work in male students, as measured by a high score on the Order scale has a positive relationship to academic achievement.

Implications for Further Study

In this study there is some evidence that certain types of personality rigidity relate to academic achievement, at least among university students. However, university students are selected for academic achievement. Therefore in an extended range by inclusion of high school students, we should expect to find more significant differences thus giving the confirmed hypotheses greater validity for the population as a whole.

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APPENDICES

APPENDIX A

BARRONS COMPLEXITY SCALE (1963) Revised

Please answer ALL questions on the separate answer sheet as being either true or false for you.

Please do not write in this Test Booklet.

	_ _ _ _ _ _	Keyed Response for Complexity
1.	I believe in a life hereafter.	False
2.	I get mad easily and then get over it soon.	True
3.	I believe there is a God.	False
4.	In religious matters, I believe I would have to be called an agnostic.	True
5.	I frequently undertake more than I can accomplish.	True
6.	The unfinished and the imperfect often have greater appeal for me than the completed and the polished.	True
7.	I could cut my moorings-quit my home, my parents, and my friends-without suffering great regrets.	True
8.	Politically I am probably something of a radical.	True
9.	I think I take primarily an esthetic view of experience.	True
10.	I remember that my first day at school was very painful.	True
11.	I would enjoy the experience of living and working in a foreign country.	True
12.	I don't expect to have more than two children.	True
13.	Many of my friends would probably be considered unconventional by other people.	True
14.	The way things look now I guess I won't amount to much in the world.	True
15.	I enjoy discarding the old and accepting the new.	True
16.	I doubt that anyone will ever be able to predict my every move.	True

		Keyed Response for Complexity
17.	Some of my friends think that my ideas are impractical, if not a bit wild.	True
18.	When someone talks against certain groups or nationalities, I always speak up against such talk, even though it makes me unpopular.	True
19.	I enjoy the company of strong-willed people.	True
20.	As a child my home life was not as happy as that of most others.	True
21.	I have always had goals and ambitions that were beyond anything practical or that seemed capable of being realized.	True
22.	I often get the feeling that I am not really part of the group I associate with and that I could separate from it with little discomfort or hardship.	True
23.	People would be happier if sex experience were taken for granted in both men and women.	True
24.	I guess my friends tend to think of me as a cold and unsentimental sort of person.	True
25.	I don't like modern art.	False
26.	Disobedience to the government is never justified.	False
27.	Perfect balance is the essence of all good composition.	False
28.	It would be better if our teachers would give us a clearer idea of what they consider important.	False
29.	Straightforward reasoning appeals to me more than metaphors and the search for analogies.	False
30.	It is a pretty callous person who does not feel love and gratitude toward his parents.	False
31.	Things seem simpler as you learn more about them.	False

		Keyed Response for Complexity
32.	Every wage earner should be required to save a certain part of his income each month so that he will be able to support himself and his family in later years.	False
33.	Kindness and generosity are the most important qualities for a wife to have.	False
34.	When a person has a problem or worry, it is best for him not to think about it, but to keep busy with more cheerful things.	False
35.	It is the duty of a citizen to support his country, right or wrong.	False
36.	Barring emergencies, I have a pretty good idea what I'll be doing for the next 10 years.	False
37.	Army life is a good influence on most young men.	False
38.	I prefer team games to games in which one individual competes against another.	False
39.	An invention which takes jobs away from people should be suppressed until new work can be found for them.	False
40.	A person who doesn't vote is not a good citizen.	False
41.	I become quite irritated when I see someone spit on the sidewalk.	False
42.	I often wish people would be more definite about things.	False
43.	It is always a good thing to be frank.	False
44.	When I get bored I like to stir up some excitement.	True
45.	Sometimes I have the same dream over and over.	False
46.	I much prefer symmetry to asymmetry.	False

		Keyed Response for Complexity
47.	I would rather be a steady and dependable worker than a brilliant but unstable one.	False
48.	I would be willing to give money myself in order to right a wrong, even though I was not mixed up in it in the first place.	True
49.	It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.	False
50.	There are times when I act like a coward.	True

APPENDIX B

Edwards Personal Preference Schedule

Allen L. Edwards, University of Washington

DIRECTIONS

This schedule consists of a number of pairs of statements about things that you may or may not like; about ways in which you may or may not feel. Look at the example below.

A I like to talk about myself to others.

B I like to work toward some goal that I have set for myself.

Which of these two statements is more characteristic of what you like? If you like "talking about yourself to others" more than you like "working toward some goal that you have set for yourself," then you should choose A over B. If you like "working toward some goal that you have set for yourself" more than you like "talking about yourself to others," then you should choose B over A.

You may like both A and B. In this case, you would have to choose between the two and you should choose the one that you like better. If you dislike both A and B, then you should choose the one that you dislike less.

Some of the pairs of statements in the schedule have to do with your likes, such as A and B above. Other pairs of statements have to do with how you feel. Look at the example below.

A I feel depressed when I fail at something.

B I feel nervous when giving a talk before a group.

Which of these two statements is more characteristic of how you feel? If "being depressed when you fail at something" is more characteristic of you than "being nervous when giving a talk before a group," then you should choose A over B. If B is more characteristic of you than A, then you should choose B over A.

If both statements describe how you feel, then you should choose the one which you think is more characteristic. If neither statement accurately describes how you feel, then you should choose the one which you consider to be less inaccurate.

Your choice, in each instance, should be in terms of what you like and how you feel at the present time, and not in terms of what you think you should like or how you think you should feel. This is not a test. There are no right or wrong answers. Your choices should be a description of your own personal likes and feelings. Make a choice for every pair of statements; do not skip any.

The pairs of statements on the following pages are similar to the examples given above. Read each pair of statements and pick out the one statement that better describes what you like or how you feel. Make no marks in the booklet. On the separate answer sheet are numbers corresponding to the numbers of the pairs of statements. Check to be sure you are marking for the same item number as the item you are reading in the booklet.

If your answer sheet is printed in BLACK ink:	If your answer sheet is printed in BLUE ink:
For each numbered item draw a circle around the A or B to indicate the statement you have chosen.	For each numbered item fill in the space under A or B as shown in the Directions on the answer sheet.

Do not turn this page until the examiner tells you to start.

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56-183 TB

1 A I like to help my friends when they are in trouble.
B I like to do my very best in whatever I undertake.

2 A I like to find out what great men have thought about various problems in which I am interested.
B I would like to accomplish something of great significance.

3 A Any written work that I do I like to have precise, neat, and well organized.
B I would like to be a recognized authority in some job, profession, or field of specialization.

4 A I like to tell amusing stories and jokes at parties.
B I would like to write a great novel or play.

5 A I like to be able to come and go as I want to.
B I like to be able to say that I have done a difficult job well.

6 A I like to solve puzzles and problems that other people have difficulty with.
B I like to follow instructions and to do what is expected of me.

7 A I like to experience novelty and change in my daily routine.
B I like to tell my superiors that they have done a good job on something, when I think they have.

8 A I like to plan and organize the details of any work that I have to undertake.
B I like to follow instructions and to do what is expected of me.

9 A I like people to notice and to comment upon my appearance when I am out in public.
B I like to read about the lives of great men.

10 A I like to avoid situations where I am expected to do things in a conventional way.
B I like to read about the lives of great men.

11 A I would like to be a recognized authority in some job, profession, or field of specialization.
B I like to have my work organized and planned before beginning it.

12 A I like to find out what great men have thought about various problems in which I am interested.
B If I have to take a trip, I like to have things planned in advance.

13 A I like to finish any job or task that I begin.
B I like to keep my things neat and orderly on my desk or workspace.

14 A I like to tell other people about adventures and strange things that have happened to me.
B I like to have my meals organized and a definite time set aside for eating.

15 A I like to be independent of others in deciding what I want to do.
B I like to keep my things neat and orderly on my desk or workspace.

16 A I like to be able to do things better than other people can.
B I like to tell amusing stories and jokes at parties.

17 A I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
B I like to talk about my achievements.

18 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
B I like to tell other people about adventures and strange things that have happened to me.

19 A I like to read books and plays in which sex plays a major part.
B I like to be the center of attention in a group.

20 A I like to criticize people who are in a position of authority.
B I like to use words which other people often do not know the meaning of.

21 A I like to accomplish tasks that others recognize as requiring skill and effort.
B I like to be able to come and go as I want to.

22 A I like to praise someone I admire.
B I like to feel free to do what I want to do.

23 A I like to keep my letters, bills, and other papers neatly arranged and filed according to some system.
B I like to be independent of others in deciding what I want to do.

24 A I like to ask questions which I know no one will be able to answer.
B I like to criticize people who are in a position of authority.

25 A I get so angry that I feel like throwing and breaking things.
B I like to avoid responsibilities and obligations.

26 A I like to be successful in things undertaken.
B I like to form new friendships.

27 A I like to follow instructions and to do what is expected of me.
B I like to have strong attachments with my friends.

28 A Any written work that I do I like to have precise, neat, and well organized.
B I like to make as many friends as I can.

29 A I like to tell amusing stories and jokes at parties.
B I like to write letters to my friends.

30 A I like to be able to come and go as I want to.
B I like to share things with my friends.

31 A I like to solve puzzles and problems that other people have difficulty with.
B I like to judge people by why they do something—not by what they actually do.

32 A I like to accept the leadership of people I admire.
B I like to understand how my friends feel about various problems they have to face.

33 A I like to have my meals organized and a definite time set aside for eating.
B I like to study and to analyze the behavior of others.

34 A I like to say things that are regarded as witty and clever by other people.
B I like to put myself in someone else's place and to imagine how I would feel in the same situation.

35 A I like to feel free to do what I want to do.
B I like to observe how another individual feels in a given situation.

36 A I like to accomplish tasks that others recognize as requiring skill and effort.
B I like my friends to encourage me when I meet with failure.

37 A When planning something, I like to get suggestions from other people whose opinions I respect.
B I like my friends to treat me kindly.

38 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
B I like my friends to feel sorry for me when I am sick.

39 A I like to be the center of attention in a group.
B I like my friends to make a fuss over me when I am hurt or sick.

40 A I like to avoid situations where I am expected to do things in a conventional way.
B I like my friends to sympathize with me and to cheer me up when I am depressed.

41 A I would like to write a great novel or play.
B When serving on a committee, I like to be appointed or elected chairman.

42 A When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.
B I like to supervise and to direct the actions of other people whenever I can.

43 A I like to keep my letters, bills, and other papers neatly arranged and filed according to some system.
B I like to be one of the leaders in the organizations and groups to which I belong.

44 A I like to ask questions which I know no one will be able to answer.
B I like to tell other people how to do their jobs.

45 A I like to avoid responsibilities and obligations.
B I like to be called upon to settle arguments and disputes between others.

46 A I would like to be a recognized authority in some job, profession, or field of specialization.
B I feel guilty whenever I have done something I know is wrong.

47 A I like to read about the lives of great men.
B I feel that I should confess the things that I have done that I regard as wrong.

48 A I like to plan and organize the details of any work that I have to undertake.
B When things go wrong for me, I feel that I am more to blame than anyone else.

49 A I like to use words which other people often do not know the meaning of.
B I feel that I am inferior to others in most respects.

50 A I like to criticize people who are in a position of authority.
B I feel timid in the presence of other people I regard as my superiors.

51 A I like to do my very best in whatever I undertake.
B I like to help other people who are less fortunate than I am.

52 A I like to find out what great men have thought about various problems in which I am interested.
B I like to be generous with my friends.

53 A I like to make a plan before starting in to do something difficult.
B I like to do small favors for my friends.

54 A I like to tell other people about adventures and strange things that have happened to me.
B I like my friends to confide in me and to tell me their troubles.

55 A I like to say what I think about things.
B I like to forgive my friends who may sometimes hurt me.

56 A I like to be able to do things better than other people can.
B I like to eat in new and strange restaurants.

57 A I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
B I like to participate in new fads and fashions.

58 A I like to have my work organized and planned before beginning it.
B I like to travel and to see the country.

59 A I like people to notice and to comment upon my appearance when I am out in public.
B I like to move about the country and to live in different places.

60 A I like to be independent of others in deciding what I want to do.
B I like to do new and different things.

61 A I like to be able to say that I have done a difficult job well.
B I like to work hard at any job I undertake.

62 A I like to tell my superiors that they have done a good job on something, when I think they have.
B I like to complete a single job or task at a time before taking on others.

63 A If I have to take a trip, I like to have things planned in advance.
B I like to keep working at a puzzle or problem until it is solved.

64 A I sometimes like to do things just to see what effect it will have on others.
B I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.

65 A I like to do things that other people regard as unconventional.
B I like to put in long hours of work without being distracted.

66 A I would like to accomplish something of great significance.
B I like to kiss attractive persons of the opposite sex.

67 A I like to praise someone I admire.
B I like to be regarded as physically attractive by those of the opposite sex.

68 A I like to keep my things neat and orderly on my desk or workspace.
B I like to be in love with someone of the opposite sex.

69 A I like to talk about my achievements.
B I like to listen to or to tell jokes in which sex plays a major part.

70 A I like to do things in my own way and without regard to what others may think.
B I like to read books and plays in which sex plays a major part.

71 A I would like to write a great novel or play.
B I like to attack points of view that are contrary to mine.

72 A When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.
B I feel like criticizing someone publicly if he deserves it.

73 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
B I get so angry that I feel like throwing and breaking things.

74 A I like to ask questions which I know no one will be able to answer.
B I like to tell other people what I think of them.

75 A I like to avoid responsibilities and obligations.
B I feel like making fun of people who do things that I regard as stupid.

76 A I like to be loyal to my friends.
B I like to do my very best in whatever I undertake.

77 A I like to observe how another individual feels in a given situation.
B I like to be able to say that I have done a difficult job well.

78 A I like my friends to encourage me when I meet with failure.
B I like to be successful in things undertaken.

79 A I like to be one of the leaders in the organizations and groups to which I belong.
B I like to be able to do things better than other people can.

80 A When things go wrong for me, I feel that I am more to blame than anyone else.
B I like to solve puzzles and problems that other people have difficulty with.

81 A I like to do things for my friends.
B When planning something, I like to get suggestions from other people whose opinions I respect.

82 A I like to put myself in someone else's place and to imagine how I would feel in the same situation.
B I like to tell my superiors that they have done a good job on something, when I think they have.

83 A I like my friends to be sympathetic and understanding when I have problems.
B I like to accept the leadership of people I admire.

84 A When serving on a committee, I like to be appointed or elected chairman.
B When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.

85 A If I do something that is wrong, I feel that I should be punished for it.
B I like to conform to custom and to avoid doing things that people I respect might consider unconventional.

86 A I like to share things with my friends.
B I like to make a plan before starting in to do something difficult.

87 A I like to understand how my friends feel about various problems they have to face.
B If I have to take a trip, I like to have things planned in advance.

88 A I like my friends to treat me kindly.
B I like to have my work organized and planned before beginning it.

89 A I like to be regarded by others as a leader.
B I like to keep my letters, bills, and other papers neatly arranged and filed according to some system.

90 A I feel that the pain and misery that I have suffered has done me more good than harm.
B I like to have my life so arranged that it runs smoothly and without much change in my plans.

91 A I like to have strong attachments with my friends.
B I like to say things that are regarded as witty and clever by other people.

92 A I like to think about the personalities of my friends and to try to figure out what makes them as they are.
B I sometimes like to do things just to see what effect it will have on others.

93 A I like my friends to make a fuss over me when I am hurt or sick.
B I like to talk about my achievements.

94 A I like to tell other people how to do their jobs.
B I like to be the center of attention in a group.

95 A I feel timid in the presence of other people I regard as my superiors.
B I like to use words which other people often do not know the meaning of.

96 A I like to do things with my friends rather than by myself.
B I like to say what I think about things.

97 A I like to study and to analyze the behavior of others.
B I like to do things that other people regard as unconventional.

98 A I like my friends to feel sorry for me when I am sick.
B I like to avoid situations where I am expected to do things in a conventional way.

99 A I like to supervise and to direct the actions of other people whenever I can.
B I like to do things in my own way without regard to what others may think.

100 A I feel that I am inferior to others in most respects.
B I like to avoid responsibilities and obligations.

101 A I like to be successful in things undertaken.
B I like to form new friendships.

102 A I like to analyze my own motives and feelings.
B I like to make as many friends as I can.

103 A I like my friends to help me when I am in trouble.
B I like to do things for my friends.

104 A I like to argue for my point of view when it is attacked by others.
B I like to write letters to my friends.

105 A I feel guilty whenever I have done something I know is wrong.
B I like to have strong attachments with my friends.

106 A I like to share things with my friends.
B I like to analyze my own motives and feelings.

107 A I like to accept the leadership of people I admire.
B I like to understand how my friends feel about various problems they have to face.

108 A I like my friends to do many small favors for me cheerfully.
B I like to judge people by why they do something—not by what they actually do.

109 A When with a group of people, I like to make the decisions about what we are going to do.
B I like to predict how my friends will act in various situations.

110 A I feel better when I give in and avoid a fight, than I would if I tried to have my own way.
B I like to analyze the feelings and motives of others.

111 A I like to form new friendships.
B I like my friends to help me when I am in trouble.

112 A I like to judge people by why they do something—not by what they actually do.
B I like my friends to show a great deal of affection toward me.

113 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
B I like my friends to feel sorry for me when I am sick.

114 A I like to be called upon to settle arguments and disputes between others.
B I like my friends to do many small favors for me cheerfully.

115 A I feel that I should confess the things that I have done that I regard as wrong.
B I like my friends to sympathize with me and to cheer me up when I am depressed.

116 A I like to do things with my friends rather than by myself.
B I like to argue for my point of view when it is attacked by others.

117 A I like to think about the personalities of my friends and to try to figure out what makes them as they are.
B I like to be able to persuade and influence others to do what I want to do.

118 A I like my friends to sympathize with me and to cheer me up when I am depressed.
B When with a group of people, I like to make the decisions about what we are going to do.

119 A I like to ask questions which I know no one will be able to answer.
B I like to tell other people how to do their jobs.

120 A I feel timid in the presence of other people I regard as my superiors.
B I like to supervise and to direct the actions of other people whenever I can.

121 A I like to participate in groups in which the members have warm and friendly feelings toward one another.
B I feel guilty whenever I have done something I know is wrong.

122 A I like to analyze the feelings and motives of others.
B I feel depressed by my own inability to handle various situations.

123 A I like my friends to feel sorry for me when I am sick.
B I feel better when I give in and avoid a fight, than I would if I tried to have my own way.

124 A I like to be able to persuade and influence others to do what I want.
B I feel depressed by my own inability to handle various situations.

125 A I like to criticize people who are in a position of authority.
B I feel timid in the presence of other people I regard as my superiors.

126 A I like to participate in groups in which the members have warm and friendly feelings toward one another.
B I like to help my friends when they are in trouble.

127 A I like to analyze my own motives and feelings.
B I like to sympathize with my friends when they are hurt or sick.

128 A I like my friends to help me when I am in trouble.
B I like to treat other people with kindness and sympathy.

129 A I like to be one of the leaders in the organizations and groups to which I belong.
B I like to sympathize with my friends when they are hurt or sick.

130 A I feel that the pain and misery that I have suffered has done me more good than harm.
B I like to show a great deal of affection toward my friends.

131 A I like to do things with my friends rather than by myself.
B I like to experiment and to try new things.

132 A I like to think about the personalities of my friends and to try to figure out what makes them as they are.
B I like to try new and different jobs—rather than to continue doing the same old things.

133 A I like my friends to be sympathetic and understanding when I have problems.
B I like to meet new people.

134 A I like to argue for my point of view when it is attacked by others.
B I like to experience novelty and change in my daily routine.

135 A I feel better when I give in and avoid a fight, than I would if I tried to have my own way.
B I like to move about the country and to live in different places.

136 A I like to do things for my friends.
B When I have some assignment to do, I like to start in and keep working on it until it is completed.

137 A I like to analyze the feelings and motives of others.
B I like to avoid being interrupted while at my work.

138 A I like my friends to do many small favors for me cheerfully.
B I like to stay up late working in order to get a job done.

139 A I like to be regarded by others as a leader.
B I like to put in long hours of work without being distracted.

140 A If I do something that is wrong, I feel that I should be punished for it.
B I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.

141 A I like to be loyal to my friends.
B I like to go out with attractive persons of the opposite sex.

142 A I like to predict how my friends will act in various situations.
B I like to participate in discussions about sex and sexual activities.

143 A I like my friends to show a great deal of affection toward me.
B I like to become sexually excited.

144 A When with a group of people, I like to make the decisions about what we are going to do.
B I like to engage in social activities with persons of the opposite sex.

145 A I feel depressed by my own inability to handle various situations.
B I like to read books and plays in which sex plays a major part.

146 A I like to write letters to my friends.
B I like to read newspaper accounts of murders and other forms of violence.

147 A I like to predict how my friends will act in various situations.
B I like to attack points of view that are contrary to mine.

148 A I like my friends to make a fuss over me when I am hurt or sick.
B I feel like blaming others when things go wrong for me.

149 A I like to tell other people how to do their jobs.
B I feel like getting revenge when someone has insulted me.

150 A I feel that I am inferior to others in most respects.
B I feel like telling other people off when I disagree with them.

151 A I like to help my friends when they are in trouble.
B I like to do my very best in whatever I undertake.

152 A I like to travel and to see the country.
B I like to accomplish tasks that others recognize as requiring skill and effort.

153 A I like to work hard at any job I undertake.
B I would like to accomplish something of great significance.

154 A I like to go out with attractive persons of the opposite sex.
B I like to be successful in things undertaken.

155 A I like to read newspaper accounts of murders and other forms of violence.
B I would like to write a great novel or play.

156 A I like to do small favors for my friends.
B When planning something, I like to get suggestions from other people whose opinions I respect.

157 A I like to experience novelty and change in my daily routine.
B I like to tell my superiors that they have done a good job on something, when I think they have.

158 A I like to stay up late working in order to get a job done.
B I like to praise someone I admire.

159 A I like to become sexually excited.
B I like to accept the leadership of people I admire.

160 A I feel like getting revenge when someone has insulted me.
B When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.

161 A I like to be generous with my friends.
B I like to make a plan before starting in to do something difficult.

162 A I like to meet new people.
B Any written work that I do I like to have precise, neat, and well organized.

163 A I like to finish any job or task that I begin.
B I like to keep my things neat and orderly on my desk or workspace.

164 A I like to be regarded as physically attractive by those of the opposite sex.
B I like to plan and organize the details of any work that I have to undertake.

165 A I like to tell other people what I think of them.
B I like to have my meals organized and a definite time set aside for eating.

166 A I like to show a great deal of affection toward my friends.
B I like to say things that are regarded as witty and clever by other people.

167 A I like to try new and different jobs—rather than to continue doing the same old things.
B I sometimes like to do things just to see what effect it will have on others.

168 A I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.
B I like people to notice and to comment upon my appearance when I am out in public.

169 A I like to read books and plays in which sex plays a major part.
B I like to be the center of attention in a group.

170 A I feel like blaming others when things go wrong for me.
B I like to ask questions which I know no one will be able to answer.

171 A I like to sympathize with my friends when they are hurt or sick.
B I like to say what I think about things.

172 A I like to eat in new and strange restaurants.
B I like to do things that other people regard as unconventional.

173 A I like to complete a single job or task at a time before taking on others.
B I like to feel free to do what I want to do.

174 A I like to participate in discussions about sex and sexual activities.
B I like to do things in my own way without regard to what others may think.

175 A I get so angry that I feel like throwing and breaking things.
B I like to avoid responsibilities and obligations.

176 A I like to help my friends when they are in trouble.
B I like to be loyal to my friends.

177 A I like to do new and different things.
B I like to form new friendships.

178 A When I have some assignment to do, I like to start in and keep working on it until it is completed.
B I like to participate in groups in which the members have warm and friendly feelings toward one another.

179 A I like to go out with attractive persons of the opposite sex.
B I like to make as many friends as I can.

180 A I like to attack points of view that are contrary to mine.
B I like to write letters to my friends.

181 A I like to be generous with my friends.
B I like to observe how another individual feels in a given situation.

182 A I like to eat in new and strange restaurants.
B I like to put myself in someone else's place and to imagine how I would feel in the same situation.

183 A I like to stay up late working in order to get a job done.
B I like to understand how my friends feel about various problems they have to face.

184 A I like to become sexually excited.
B I like to study and to analyze the behavior of others.

185 A I feel like making fun of people who do things that I regard as stupid.
B I like to predict how my friends will act in various situations.

186 A I like to forgive my friends who may sometimes hurt me.
B I like my friends to encourage me when I meet with failure.

187 A I like to experiment and to try new things.
B I like my friends to be sympathetic and understanding when I have problems.

188 A I like to keep working at a puzzle or problem until it is solved.
B I like my friends to treat me kindly.

189 A I like to be regarded as physically attractive by those of the opposite sex.
B I like my friends to show a great deal of affection toward me.

190 A I feel like criticizing someone publicly if he deserves it.
B I like my friends to make a fuss over me when I am hurt or sick.

191 A I like to show a great deal of affection toward my friends.
B I like to be regarded by others as a leader.

192 A I like to try new and different jobs—rather than to continue doing the same old things.
B When serving on a committee, I like to be appointed or elected chairman.

193 A I like to finish any job or task that I begin.
B I like to be able to persuade and influence others to do what I want.

194 A I like to participate in discussions about sex and sexual activities.
B I like to be called upon to settle arguments and disputes between others.

195 A I get so angry that I feel like throwing and breaking things.
B I like to tell other people how to do their jobs.

196 A I like to show a great deal of affection toward my friends.
B When things go wrong for me, I feel that I am more to blame than anyone else.

197 A I like to move about the country and to live in different places.
B If I do something that is wrong, I feel that I should be punished for it.

198 A I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.
B I feel that the pain and misery that I have suffered has done me more good than harm.

199 A I like to read books and plays in which sex plays a major part.
B I feel that I should confess the things that I have done that I regard as wrong.

200 A I feel like blaming others when things go wrong for me.
B I feel that I am inferior to others in most respects.

201 A I like to do my very best in whatever I undertake.
B I like to help other people who are less fortunate than I am.

202 A I like to do new and different things.
B I like to treat other people with kindness and sympathy.

203 A When I have some assignment to do, I like to start in and keep working on it until it is completed.
B I like to help other people who are less fortunate than I am.

204 A I like to engage in social activities with persons of the opposite sex.
B I like to forgive my friends who may sometimes hurt me.

205 A I like to attack points of view that are contrary to mine.
B I like my friends to confide in me and to tell me their troubles.

206 A I like to treat other people with kindness and sympathy.
B I like to travel and to see the country.

207 A I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
B I like to participate in new fads and fashions.

208 A I like to work hard at any job I undertake.
B I like to experience novelty and change in my daily routine.

209 A I like to kiss attractive persons of the opposite sex.
B I like to experiment and to try new things.

210 A I feel like telling other people off when I disagree with them.
B I like to participate in new fads and fashions.

211 A I like to help other people who are less fortunate than I am.
B I like to finish any job or task that I begin.

212 A I like to move about the country and to live in different places.
B I like to put in long hours of work without being distracted.

213 A If I have to take a trip, I like to have things planned in advance.
B I like to keep working at a puzzle or problem until it is solved.

214 A I like to be in love with someone of the opposite sex.
B I like to complete a single job or task before taking on others.

215 A I like to tell other people what I think of them.
B I like to avoid being interrupted while at my work.

216 A I like to do small favors for my friends.
B I like to engage in social activities with persons of the opposite sex.

217 A I like to meet new people.
B I like to kiss attractive persons of the opposite sex.

218 A I like to keep working at a puzzle or problem until it is solved.
B I like to be in love with someone of the opposite sex.

219 A I like to talk about my achievements.
B I like to listen to or to tell jokes in which sex plays a major part.

220 A I feel like making fun of people who do things that I regard as stupid.
B I like to listen to or to tell jokes in which sex plays a major part.

221 A I like my friends to confide in me and to tell me their troubles.
B I like to read newspaper accounts of murders and other forms of violence.

222 A I like to participate in new fads and fashions.
B I feel like criticizing someone publicly if he deserves it.

223 A I like to avoid being interrupted while at my work.
B I feel like telling other people off when I disagree with them.

224 A I like to listen to or to tell jokes in which sex plays a major part.
B I feel like getting revenge when someone has insulted me.

225 A I like to avoid responsibilities and obligations.
B I feel like making fun of people who do things that I regard as stupid.

APPENDIX C

EDWARDS PERSONAL PREFERENCE SCHEDULE: RESPONSES IN THE DIRECTION OF HIGH SCORES ON ORDER, CHANGE, AND ENDURANCE

Item	Response		
	Order	Change	Endurance
3	A		
8	A		
11	B		
12	B		
14	B		
15	B		
18	A		
23	A		
28	A		
33	A		
38	A		
43	A		
48	A		
53	A		
56		B	
57		B	
58	A	B	
59		B	
60		B	
61			B

Item	Response		
	Order	Change	Endurance
62			B
63	A		B
64			B
65			B
68	A		
73	A		
86	B		
87	B		
88	B		
89	B		
90	B		
131		B	
132		B	
133		B	
134		B	
135		B	
136			B
137			B
138			B
139			B
140			B

Item	Response		
	Order	Change	Endurance
152		A	
153			A
157		A	
158			A
161	B		
162	B	A	
163	B		A
164	B		
165	B		
167		A	
168			A
172		A	
173			A
177		A	
178			A
182		A	
183			A
187		A	
188			A
192		A	

Item	Response		
	Order	Change	Endurance
193			A
197		A	
198			A
202		A	
203			A
206		B	
208		B	A
209		B	
210		B	
211			B
212		A	B
214			B
215			B
217		A	
218			A
222		A	
223			A

APPENDIX D

THE PR(B) SCALE

Directions:

This scale consists of numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you.

You are to mark your answers on the answer sheet. If a statement is TRUE or MOSTLY TRUE, as applied to you, blacken between the lines under A. If a statement is FALSE or NOT USUALLY TRUE, as applied to you, blacken between the lines under B. Do not make any marks under the other columns. Answer all statements.

Remember to give YOUR OWN opinion of yourself. Make an answer for each statement.

In marking your answers on the answer sheet, be sure that the number of the statement agrees with the number on the answer sheet. Make your marks firm, but no longer than the guidlines. Erase any answer you wish to change. Do not make any marks on the question sheet.

	Responses for High Rigidity
1. I think most people would lie to get ahead.	False
2. There are some things in our society that I feel could be improved on.	Filler Question Only
3. Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	False
4. I could improve my reading.	Filler Question Only

	Responses for High Rigidity
5. Most people are honest chiefly through fear of being caught.	False
6. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.	False
7. I would like to obtain a university degree.	Filler Question Only
8. The man who provides temptation by leaving valuable property unprotected is about as much to blame for its theft as the one who steals it.	False
9. In my own way, I am somewhat ambitious.	Filler Question Only
10. I think nearly anyone would tell a lie to keep out of trouble.	False
11. I would like to get ahead.	Filler Question Only
12. Most people inwardly dislike putting themselves out to help other people.	False